

Blood-sucking baby-killers are after your bees. They are in your hive right now, draining the life from the innocent little pupae that are the future of your colony. The filthy creatures infect your bee-babies with all sorts of diseases, sometimes leaving them crippled and unable to fly. When one of these vampires is finished with a bee pupa, it moves on to another, over and over for six months or more. Unless something intentional and effective is done, your entire hive will eventually be overwhelmed with disease, the population will collapse and the hive will die.

This sounds like the plot for a low-budget science fiction movie but it is completely true. The blood-sucking vampires are called varroa mites. To us, they look like tiny ticks, about as big as a pin head. But if bees were the same size as humans, a varroa mite would be the size of a dessert plate. Imagine a tick the size of a dessert plate in the crib with your baby, sucking its blood and laying eggs that will grow into even more dessert-plate-sized ticks. That's a bee's life.



Varroa mites are not a natural parasite of European honey bees. They evolved to live in compatible equilibrium with the Asian honey bee, *apis cerana*. Because of the interrelationship of the mites' reproductive biology with that of *apis cerana*, they are pest, but not a devastating one. However at some point within the past 100 years, a varroa mite was able to jump hosts and successfully infest

European honey bees, *apis mellifera*. European honey bees pupate longer than *apis cerana*, giving varroa mites the opportunity raise more young in the developing bee cell. This difference upsets the delicate host/parasite equilibrium that exists with *apis cerana* and allows varroa populations to increase exponentially in *apis mellifera* hives.

For humans, the direct damage from a tick bite isn't usually the most critical concern. It is the tick-borne diseases such as Lyme disease and Rocky Mountain Spotted Fever that cause death and destruction. The same is true for honey bees. The direct damage caused by mites can certainly harm a developing bee pupa, but the larger impact comes from viruses the mite transmits. Two that I've seen in my hives are Deformed Wing Virus (DWV) and the virus that causes Hairless Black Syndrome. DWV causes bees to develop with shriveled, useless wings. Hairless Black Syndrome results in greasy-looking, shiny bees that suffer from paralysis. There are many other viruses that aren't visually obvious, such as Acute Paralysis Virus and Kashmir Virus, which are undoubtedly lying in wait in my hives as well. All of these work both separately and together to kill hives.

We cannot prevent or treat the viruses themselves but we can significantly reduce their transmission by getting rid of varroa mites. A few well-intentioned but naive people suggest that ordinary beekeepers shouldn't treat bees for varroa mites; instead we should let nature take its course. "Nature taking its course" is what happened when varroa mites and tracheal mites first came to the US in the 1980s. Nearly all non-managed (feral) European honey bee colonies were destroyed, and they have never recovered. The only reason that European honey bees survive today in the US is that managed hives were treated with miticides. Having learned from history, I have no need to repeat the experiment in my own apiary. I know how it will turn out. Also, I have more regard for my bees than to simply watch them die from a preventable malady.

The mite treatments we have available today are much better than the ones from just a few years ago. Apistan (flouvalinate) and Check Mite (coumaphos) were the only effective products for many years. Both have serious issues with residues and mites become resistant to them fairly quickly. Now we have two thymol-based treatments (ApiGuard and ApiLife Var) and a formic acid one (Mite-Away Quick Strips). In my experience, these new treatments are highly effective and easy to use. You must follow the directions carefully with respect to ambient temperature requirements and dosage.

There have been many treatments and methods that have been tried but have failed to pass the test of time. They've also failed to pass rigorous university testing. But for some reason they are still popular with a subset of hobbyist beekeepers. They are the product of wishful thinking: if they did work, perhaps the world would be a better place. But they don't work. Two popular examples are powdered sugar dusting (not to be confused with the powdered sugar shake test used to count varroa mites) and small cell foundation. Others that seem to finally have passed away after attracting a fervent following include fumigation with food-grade mineral oil and the use of tobacco or sumac leaves in smokers.

A common theme for many of these quack treatments is that they are either expensive, very labor intensive or complicated to implement. So among believers, the inevitable failure is not attributed to failure of the treatment itself, but it is said to be due to not applying it faithfully. They give the beekeeper a sense of "doing something," but the sad fact is that it is usually easier, cheaper and less harmful to bees to apply a proven, effective, commercially available treatment rather than a silly hoax or homemade remedy. ApiGuard and MiteAway Quick Strips cost roughly \$5 per hive per year, which is much less than replacing a box of dead bees. The price of a single pound of honey more than pays to keep a hive healthy.

People often tell me, "My bees don't have mites. I looked and I didn't see any." Well, southern flying squirrels are quite common in North Carolina, but when was the last time you actually saw one? Varroa mites, like flying squirrels, make a point of not being seen. Mites are visible to the naked eye, but they hide between a bee's body segments. The bees search for them too, so hiding is something a mite has to be good at in order to survive. Nearly two-thirds of them are underneath the brood cappings. All of this makes it impossible for ordinary visual inspection to be a meaningful or useful indicator of mite infestation. However there is a simple and reliable method for determining a hive's infestation level called the sugar shake test. Researchers at the University of Minnesota have written an easy-to-follow description of how to perform the test, available at the link [<here>](#).

I encourage you to study the varroa mite as thoroughly as you study the honey bee. Don't be one of the many beekeepers who open up an empty hive, scratch their heads and say, "What happened?" For more information, Master Beekeeper Lewis Cauble has assembled a list of invaluable links regarding varroa mite biology and treatment. This treasure trove can be found in the Orange County Beekeepers Association archives [<here>](#).

September is a great time to check your mite load and use an effective treatment. Get to it! Your poor little bee babies will thank you.

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